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10/700,855	11/04/2003	Bengt Lindoff	040072-247	6321
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			EXAMINER TAYONG, HELENE E	
			ART UNIT 2611	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/700,855

Applicant(s)

LINDOFF ET AL.

Examiner

Helene Tayong

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☒ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/23/04 and 9/11/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 30-32 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

In claim 30, a "computer - readable medium" is being recited; however, a computer - readable medium would reasonably be interpreted by one of ordinary skill in the art as software per se. This subject matter is not limited to that which falls within a statutory category of invention (i.e. it is not a process, machine, manufacture, or a composition of matter). Software is functional descriptive material and functional descriptive material is non-statutory subject matter.

Computer programs claimed as computer per se, i.e., the description or expressions of the programs, are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality

to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-842 32 USPQ2d at 1035.

Thus, in view of the rejection of claim 30, the system of claims 31 and 32 are also interpreted to be software per se, and are also rejected as being non-statutory subject matter.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4-14, 16 and 17-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tirola et al (US20040076132) in view of Wang (US 20060154633).

(1) with regards to claims 1 and 25;

Tirola et al in (figure 2, 204) discloses a method of estimating interference in a terminal in a code division multiple access communication system (figure 1, page 2, [0032]), in which a pilot channel uses a scrambling code and the terminal uses an alternative scrambling code on a dedicated channel determined by a channelization code (page 3, [0040]-[0046]), comprising the steps of:

estimating the interference by determining a variance of symbols in at least one portion of the dedicated channel (fig. 2, 204 and page 3, [0050]-[0058], page 4, [0070]).

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching

(a) determining an empty channelization code m under the alternative scrambling code;

(b) using the empty channelization code m for estimating the interference;

(i) with regards to item (a) above;

However, Wang in the same endeavor discloses determining an empty channelization code m under the alternative scrambling code (fig. 7, 28 and page 3, [0043]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the method of Wang in the method of Tirola et al in order to determining an empty channelization code m under the alternative scrambling code. The motivation to utilize the method of Wang in the method of Tirola et al would be to improve the accuracy of the uplink SINR estimation, and especially of the interference plus noise estimation, without requiring any changes to existing standards (page 1, [0005]).

(ii) with regards to item (b) above;

However, Wang in the same endeavor discloses using the empty channelization code m for estimating the interference (see abstract, figure 7, 32 and page 3, [0043]-[0046]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the method of Wang in the method of Tirola et al in order to use the empty channelization code m for estimating the interference. The motivation to utilize the method of Wang in the method of Tirola et al would be for high accuracy of

the IN estimation (page 1, [0008])

(2) with regards to claim 4;

Tirola et al further explicitly discloses wherein the dedicated channel is a dedicated physical channel (DPCH) (page 3, [0046]) and the pilot channel is a common pilot channel (CPICH) (page 3, [0040]-[0043] and [0046]).

(3) with regards to claim 5;

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching wherein the empty channelization code m is determined based on either information of such an empty code or identification of the empty code.

However, Wang in the same endeavor discloses determining an empty channelization code m based on either information of such an empty code or identification of the empty code (see abstract, fig. 7, 28 and page 3, [0043]-[0046]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the method of Wang in the method of Tirola et al in order to determining an empty channelization code m based on either information of such an empty code or identification of the empty code. The motivation to utilize the method of Wang in the method of Tirola et al would be for high accuracy of the IN estimation (page 1, [0008])

(4) with regards to claim 6;

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching wherein the information of the empty channelization code m is included in a message sent to the terminal.

However, Wang in the same endeavor discloses wherein the information of the empty channelization code m is included in a message sent to the terminal (figure 10 and page 4, [0052]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the method of Wang in the method of Tirola et al in order to show that the information of the empty channelization code m is included in a message sent to the terminal. The motivation to utilize the method of Wang in the method of Tirola et al would be to yield a good estimate of the interference.

(5) with regards to claim 7;

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching wherein the information of an empty channelization code m is included in a specification of the communication system.

However, Wang in the same endeavor implicitly discloses wherein the information of an empty channelization code m is included in a specification of the communication system (page 3, [0038]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have incorporated the teaching of Wang in the method of Tirola et al in order to implicitly show that the information of an empty channelization code m is included in a specification of the communication system.

(6) with regards to claim 8;

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching wherein the information of an empty channelization code includes

channelization codes used by a common control channel.

However, Wang in the same endeavor discloses wherein the information of an empty channelization code includes channelization codes used by a common control channel (fig. 7, fig. 5 and page 3, [0039]-[0040]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have incorporated the teaching of Palenius in the method of Tirola et al in order to show that the information of an empty channelization code includes channelization codes used by a common control channel. The motivation to utilize the method of Wang in the method of Tirola et al would be to yield a good estimate of the interference.

(7) with regards to claims 9, 17, 21 and 27;

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching wherein identification of the empty channelization code m comprises the steps of: generating an initial I-estimate;

setting a threshold based on the initial I-estimate;

selecting a candidate empty channelization code;

for the candidate empty channelization code, forming an I-estimate; comparing the formed I-estimate to the threshold; and

if the formed I-estimate exceeds the threshold, selecting another candidate empty code and repeating the forming and comparing steps,

otherwise identifying the candidate empty code as the empty channelization code.

However, Wang in the same endeavor implicitly discloses in (fig. 7, a selector (28)) that searches for and selects an idle channelization (see abstract, and [age 3, [0043]-[0046]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have incorporated the search method of Wang in the method of Tirola et al in order to explicitly show the steps for identifying the empty channelization code m. The motivation to utilize the method of Wang in the method of Tirola et al would be to yield a good estimate of the interference.

(8) with regards to claims 10 and 18;

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching wherein the initial I-estimate is based on a variance of symbols in a signal received by the terminal.

However, Wang in the same endeavor discloses wherein the initial I-estimate is based on a variance of symbols in a signal received by the terminal (page 3, [0042]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the method of Wang in the method of Tirola et al in order to show that the information of the empty channelization code m is included in a message sent to the terminal. The motivation to utilize the method of Wang in the method of Tirola et al would be to yield a good estimate of the interference.

(9) with regards to claims 11 and 19;

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching wherein the threshold is set as the initial I-estimate.

However, Wang in the same endeavor implicitly discloses in (fig. 7, a selector (28)) that searches for and selects an idle channelization (see abstract, and [page 3, [0043]-[0046]]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have incorporated the search method of Wang in the method of Tirola et al in order to explicitly show the steps wherein the threshold is set as the initial I-estimate. The motivation to utilize the method of Wang in the method of Tirola et al would be to yield a good estimate of the interference.

(10) with regards to claims 12 and 20;

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching wherein the I-estimate is formed according to

$$I_{\text{est}} = \frac{1}{N} \sum_{i=1}^N |d_i^m|^2.$$

However, Wang in the same endeavor discloses the I-estimate (page 3, [0043]-[0046]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have incorporated the method of Wang in the method of Tirola et al in order to explicitly derive I-estimate. The motivation to utilize the method of Wang in the method of Tirola et al would be to yield a good estimate of the interference.

(11) with regards to claim 13;

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching wherein the interference for an empty channelization code m is

estimated according to

$$I_m = \frac{1}{N} \sum_{k=1}^N |x_k^m|^2.$$

However, Wang in the same endeavor discloses the I-estimate (page 3, [0043]-[0046]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have incorporated the method of Wang in the method of Tirola et al in order to explicitly derive the equation for estimating I-estimate interference for an empty channelization code m. The motivation to utilize the method of Wang in the method of Tirola et al would be to yield a good estimate of the interference

(12) with regards to claim 14;

Tirola et al further discloses Wherein the interference is estimated by determining a variance of symbols according to

$$I_{\text{direct}} = \frac{1}{N} \sum_{k=1}^N |x_k(k) - m_d|^2.$$

(page 3, [0059])

(13) with regards to claim 16;

Tirola et al further discloses wherein the estimated interference is used for estimating a signal-to-interference ratio (page 3, [0046]).

(14) with regards to claims 22 and 28;

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching wherein a threshold is derived from the initial I-estimate by filtering

the initial I-estimate.

However, Wang in the same endeavor implicitly discloses in (fig. 7, a selector (28)) that searches for and selects an idle channelization (see abstract, and [age 3, [0043]-[0046]]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have incorporated the search method of Wang in the method of Tirola et al in order to explicitly show how a threshold is derived from the initial I-estimate by filtering the initial I-estimate. The motivation to utilize the method of Wang in the method of Tirola et al would be to yield a good estimate of the interference.

(15) with regards to claims 23 and 24;

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching wherein the candidate empty channelization code m is selected based on predetermined code allocation rules as applied in claim 23 and

wherein the candidate empty channelization code m is selected by determining a channelization code used by a channel, locating the used channelization code in a code tree, and choosing as the candidate empty channelization code m a code in the code tree that is remote from the used channelization code.

However, Wang in the same endeavor discloses wherein the candidate empty channelization code m is selected by determining a channelization code used by a channel, locating the used channelization code in a code tree, and choosing as the candidate empty channelization code m a code in the code tree that is remote from the used channelization code (fig. 5 and 6 and page 3, [0039]-[0042]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the method of Wang in the method of Tirola et al in order to teach wherein the candidate empty channelization code m is selected by determining a channelization code used by a channel, locating the used channelization code in a code tree, and choosing as the candidate empty channelization code m a code in the code tree that is remote from the used channelization code. The motivation to utilize the method of Wang in the method of Tirola et al would be to yield a good estimate of the interference.

(16) with regards to claim 29;

Tirola et al further discloses wherein the terminal complies with a standard for a universal mobile telecommunications system (UMTS) (also known as W-CDMA), (fig. 1 and page 2, [0025] and [0032]).

4. Claims 2-3, 15 and 26 rejected under 35 U.S.C. 103(a) as being unpatentable over Tirola et al (US20040076132) in view of Wang (US 20060154633) as applied in claims 1 and 25 above, and further in view of Jokinen et al (US 6038238).

(1) with regards to claims 2 and 26;

Tirola et al as modified by Wang discloses wherein the variance of symbols is determined by estimating the interference by determining a variance of symbols in at least two portions of the dedicated channel (fig. 2, 204 and page 3, [0050]-[0058]).

Tirola et al as modified by Wang discloses all of the subject matter discussed above, but for specifically teaching determining whether the communication system is by using discontinuous transmission (DTX),

However, Jokinen et al in the same endeavor discloses in (fig.4), a method to realize discontinuous transmission (DTX) in a telecommunications network (col. 5, lines 20-36).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the method of Jokinen et al in the method of Tirola et al as modified by Wang in order to determine whether the communication system is by using discontinuous transmission (DTX). The motivation to utilize the method of Jokinen et al in the method of Tirola et al as modified by Wang would be to reduce co-channel interference and its effect on the communication quality (col. 1, lines 16-18).

(2) with regards to claims 3 and 15;

Tirola et al further explicitly discloses wherein the at least two portions include a dedicated physical control channel (DPCCH) (page 3, [0040]-[0043]) and

implicitly discloses a dedicated physical data channel (generally, a dedicated radio link comprises a physical control channel called (DPCCH) dedicated physical control channel and physical data channels called DPDCH (dedicated physical data channel) (DPDCH).

5. Claims 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tirola et al (US20040076132) in view of Wang (US 20060154633) and further in view of Langberg et al (US 5852630).

(1) with regards to claims 30-32;

Tirola et al as modified by Wang discloses all of the subject matter as described above except for the method written by a software program embodied in a computer-

readable medium.

However, Langberg et al. teaches that the method and apparatus for a transceiver warm start activation procedure with precoding can be implemented in software stored in a computer-readable medium. The computer-readable medium is an electronic, magnetic, optical, or other physical device or means that can be contain or store a computer program for use by or in connection with a computer-related system or method (column 3, lines 51-65). One of ordinary skilled in the art would have clearly recognized that the method of Tirola et al as modified by Wang would have been implemented in software. The implemented software would perform same function of the hardware for less expense, adaptability, and flexibility. Therefore, it would have been obvious to one of ordinary skilled in the art at the time of the invention was made to use the software as taught by Langberg et al. in the method of Tirola et al as modified by Wang in order to reduce cost and improve the adaptability and flexibility of the communication system.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Willenegger et al (US 20030174686) discloses a method and apparatus for reducing interference-channel interference in a wireless communication system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helene Tayong whose telephone number is 571-270-

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1675. The examiner can normally be reached on Monday-Friday 8:00 am to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Liu Shuwang can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Helene Tayong

12/26/07



SHUWANG LIU
SUPERVISORY PATENT EXAMINER